

Pre-Calculus w/Analysis -- QUIZLING

A Cacophony of Functions

Music to \_\_\_\_\_'s ears!!!

Remember: it's not what problems you know how to do,  
it's what tools you know how to use!!

1. Define (10 points):

Function -

Domain -

Range -

Vertical Line Test -

Explain why the vertical line test works -

2. What are the domain and range of the following functions? (4 points each)

A.  $g(s) = \frac{1}{3}s^3 - \frac{2}{5}s^2 + 37$

B.  $h(t) = \frac{1}{t+2}$

C.  $g(\beta) = \beta - \beta^2 + 3$

D.  $f(r) = \frac{\sqrt{r-1}}{r}$  HINT: Think about the value of  $r$  near critical values, and end behaviour, as  $r$  gets very big (and very negative).

4. Given the function  $f, f(x) = x^2 + 2x - 2$ , what are the following (give answers in standard form): (3 points each)

A.  $h_1(x)$ , such that  $h_1$  moves  $f$  up 3:

B.  $h_2(x)$ , such that  $h_2$  moves  $f$  to the right 3:

C.  $h_3(x)$ , such that  $h_3$  reflects  $f(x)$  in the  $y$  - axis:

5. Let  $f(x)$  be defined by the table below (it is what it is - don't try to figure out an equation):

$x$	-3	-2	-1	0	1	2	3
$f(x)$	2	3	7	-1	-3	4	8

Fill in the tables for the following transformations of  $f$ . (3 points for each transformation)

a.  $\frac{1}{2}f(x)$

b.  $f(x)+5$

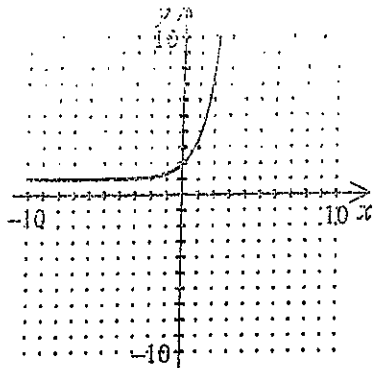
c.  $f(x-2)$

d.  $f(-x)$

$x$	-3	-2	-1	0	1	2	3
$f(x)$	2	3	7	-1	-3	4	8
$\frac{1}{2}f(x)$							
$f(x)+5$							
$f(x-2)$							
$f(-x)$							

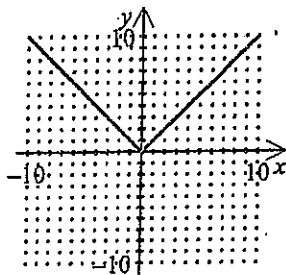
EXTRA CREDIT: What was Henry Ford's greatest contribution to American industry?

96. Given below is the graph of a function  $f(x)$ . Graph  $f(x)$ .

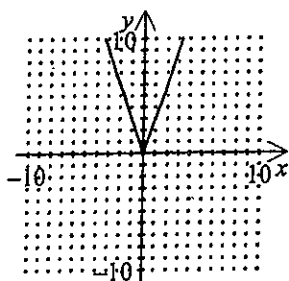


Objective 3: Use nonrigid transformations to sketch graphs of functions

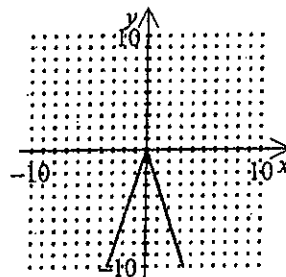
97. The graph of the function  $v(x)$  is given. Identify the graph of  $3v(x)$ .



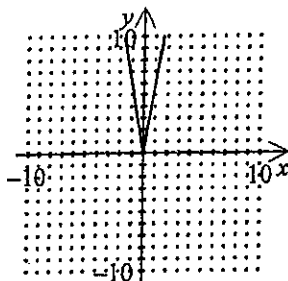
(A)



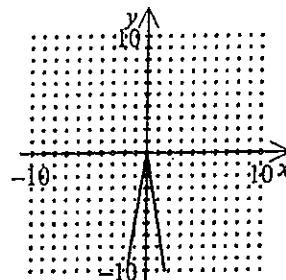
(B)



(C)



(D)



70. Identify the function that is odd.

(A)  $g(x) = -2x^4 + 2x^2 - 4$

(B)  $p(x) = \frac{-2x^3}{-2x^2 + 2}$

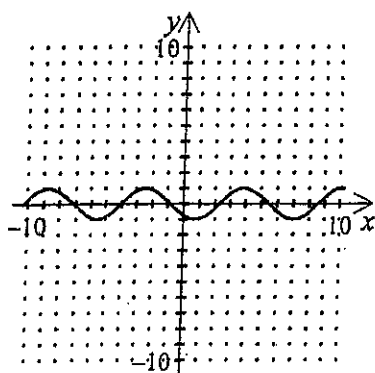
(C)  $h(x) = |-2x + 2| - 2$

(D)  $f(x) = -4x^3 + 4x^2 - 4$

71. Determine whether the function is even, odd, or neither.

$f(x) = 3x^5 + 6x$

72. Use the graph to determine if the function is even, odd, or neither.



Section 1.3: Functions

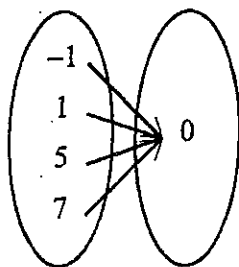
Objective 1: Determine whether relations between two variables are functions

41. Determine which set of ordered pairs  $(x, y)$  represents  $y$  as a function of  $x$ .

- (A)  $\{(-4, 0), (0, -7), (-4, -6)\}$       (B)  $\{(-4, 0), (-7, -6), (-7, -4), (-6, -7)\}$   
 (C)  $\{-4, 0, -7, -6\}$       (D)  $\{(-4, 0), (0, -4), (-6, -6)\}$

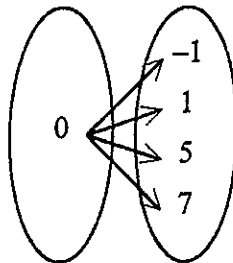
42. Identify the model of the relation  $\{(-1, 0), (1, 0), (5, 0), (7, 0)\}$ . Determine whether the relation is a function.

(A)



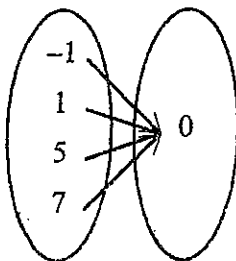
Not a function

(B)



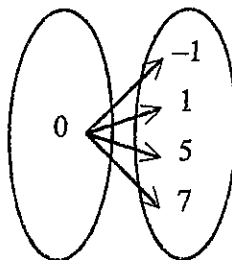
Function

(C)



Function

(D)



Not a function

43. Does the table describe  $y$  as a function of  $x$ ? Explain your reasoning.

Input $x$	1	2	3	4
Output $y$	1	4	9	16

44. Determine whether the equation represents  $y$  as a function of  $x$ .

$$x = y$$

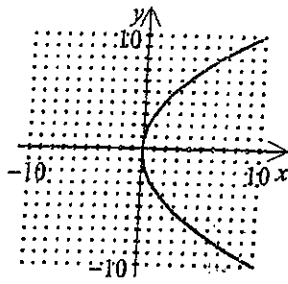


# PRE-CALCULUS & ANALYSIS

Testbank Section/1.1: Graphs of Equations

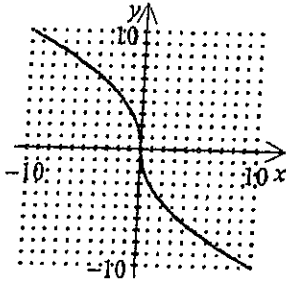
## Chapter 1 Review

(A)

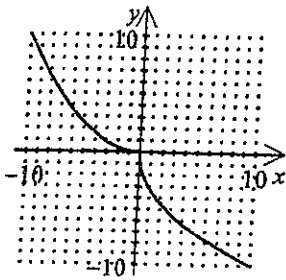


WHAT IS THE SYMMETRY OF EACH GRAPH?

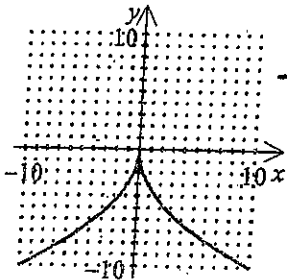
(B)



(C)



(D)



(9.)

10. Identify the equation whose graph is symmetric with respect to the the origin.

- (A)  $25x^2 + 4y^2 = 100$     (B)  $y = x^3 - 4$     (C)  $x = |y - 4|$     (D)  $y^3 = 25x^4 - 5$

8 Let  $y = f(x)$  be given by the graph in Figure 5.38. For each of the following functions, choose the letter (a) – (i) corresponding to the graph.

- (i)  $y = 2f(x)$  (ii)  $y = \frac{1}{3}f(x)$  (iii)  $y = -f(x) + 1$   
 (iv)  $y = f(x + 2) + 1$  (v)  $y = f(-x)$

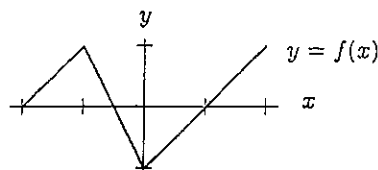
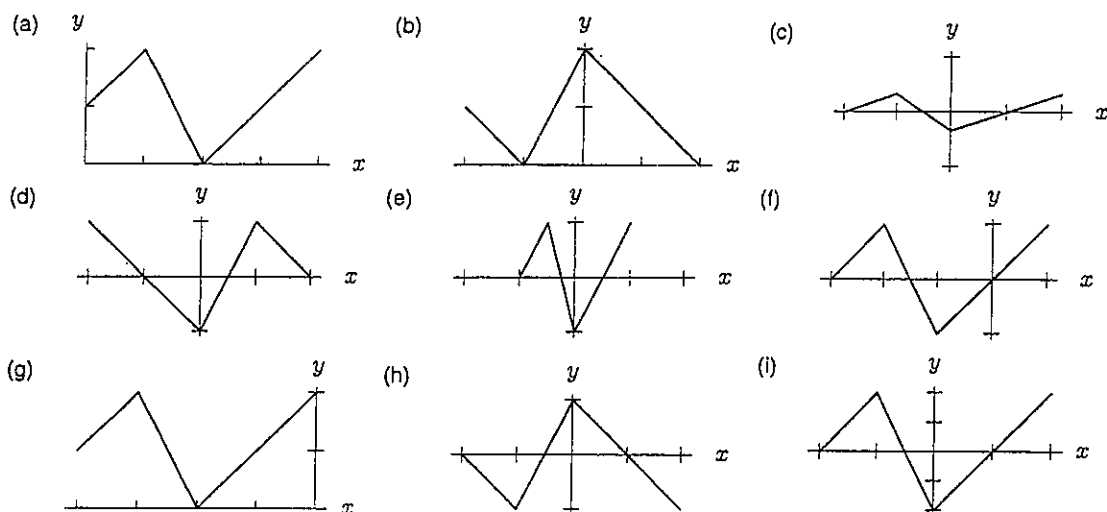


Figure 5.38



9 Let  $f(x) = 2^x$ . Find possible formulas in terms of  $f$  and then in terms of  $x$  for the transformations of  $f$  in (a) – (d). *Example:* The graph in Figure 5.39 appears to be  $f$  flipped across the  $y$ -axis. Because the horizontal asymptote is at  $y = -3$  instead of  $y = 0$ , it appears that  $f$  is shifted downward by 3 units. Therefore, a formula is  $y = f(-x) - 3 = 2^{-x} - 3$ .

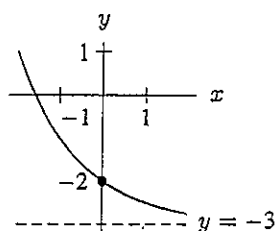
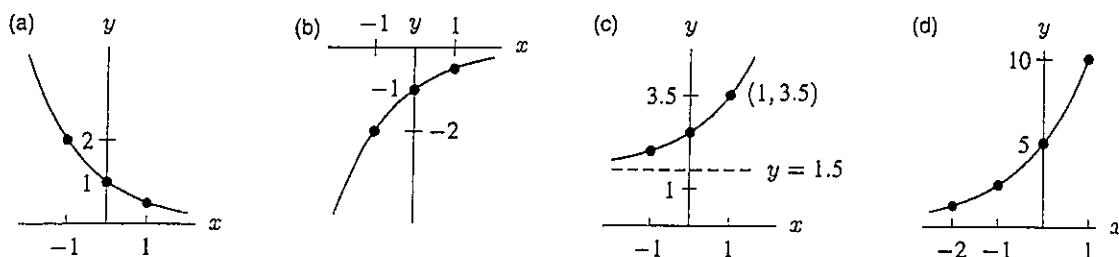


Figure 5.39



3. Using the values of  $f$  in Table 5.15, create a table of values for

- (a)  $f(-x)$ . (b)  $-f(x)$ . (c)  $3f(x)$ .  
 (d) Which of these tables from parts (a), (b), and (c) represents an even function?

TABLE 5.15

$x$	-4	-3	-2	-1	0	1	2	3	4
$f(x)$	13	6	1	-2	-3	-2	1	6	13

4. Figure 5.34 is a graph of  $y = x^{3/2}$ . Match the following functions with the graphs in Figure 5.35.

- (a)  $y = x^{3/2} - 1$  (b)  $y = (x - 1)^{3/2}$  (c)  $y = 1 - x^{3/2}$  (d)  $y = \frac{3}{2}x^{3/2}$

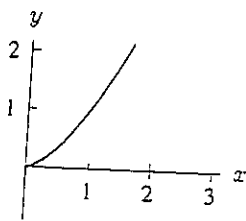


Figure 5.34

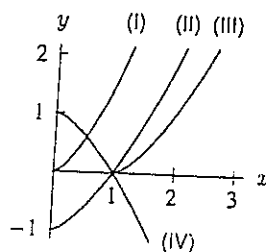


Figure 5.35

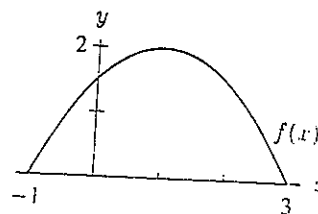


Figure 5.36

5. Graph the following functions using the graph of  $f$  in Figure 5.36:

- (a)  $y = -f(x) + 2$  (b)  $y = 2f(x)$  (c)  $y = f(x - 3)$  (d)  $y = -\frac{1}{2}f(x+1) - 3$

SKETCH  
THE  
GRAPHS. LABEL  
APPROPRIATELY

# PRECALCULUS WORKSHEET (TRANSFORMATIONS) PART I

1. Let  $f(x)$  be defined by Table 5.13. Make tables for the following transformations of  $f$  using an appropriate domain.

(a)  $\frac{1}{2}f(x)$

(b)  $-2f(x+1)$

(c)  $f(x)+5$

(d)  $f(x-2)$

(e)  $f(-x)$

(f)  $-f(x)$

TABLE 5.13

$x$	-3	-2	-1	0	1	2	3
$f(x)$	2	3	7	-1	-3	4	8

2. Table 5.14 gives values for a function  $f$ . Fill in all the blanks for which you have sufficient information.

TABLE 5.14

$x$	-3	-2	-1	0	1	2	3
$f(x)$	-4	-1	2	3	0	-3	-6
$f(-x)$							
$-f(x)$							
$f(x)-2$							
$f(x-2)$							
$f(x)+2$							
$f(x+2)$							
$2f(x)$							
$-f(x)/3$							